



Antal blad /
Number of sheets

14 ✓

TENTAMEN / EXAMINATION

- Anvisningar:** Skriv din anonymitetskod på varje blad.
Endast en uppgift får lösas på varje blad.
Var vänlig skriv tydligt!
- Instructions:** Write your anonymous code on each sheet.
Answer only one question on each sheet.
Please write clearly!

Vänligen texta anonymitetskoden i textboxen enligt exempel nedan!
Please write the Anonymous Code clearly in the textbox like example below!

Bokstäver/Letters:

A-B-C-D-E-F-G-H-I-J-K-L-M-N-O

P-Q-R-S-T-U-V-W-X-Y-Z-Å-Ä-Ö

Siffror/Numbers:

Ø-1-2-3-4-5-6-7-8-9

Exempel:

A	B	C	1	7	Ø	-	Ø	1	7
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NEGB01 Nationalekonomi
Kurskod + Kurs / Course Code + Course:

Mikroekonomi
Delkurs / Part course:

Anonymitetskod / Anonymous code = Kurskod + kodnr / course code + code number									
N	E	G	B	Ø	1	-	Ø	2	3

Tentamensdatum / Examination date:	
2017-03-31 ✓	

Behandlade uppgifter / Solved problems

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
✓	✓	✓	✓	✓										
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

Ifylles av lärare / To be completed by the examiner

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
5	5,5	2,75	0,25	2,0										
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

Poäng / Marks gained: 15,5

Betyg / Grade: 6

KEK
Examin. lärare / Kursansvarig signatur / Signature of the examiner

Max poäng / Total marks gained: _____

Namnförtydligande / Clarification of the signature

För Gk poäng / Marks gained to be passed: _____

Anonymitetskod: NEGB01-023

Microeconomics
NEGB01/ NEGB25

Answer Part 1, Question1- 3

Dinky Daruvala



NEG301-023

2

Skriv ej i detta område
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UPPGIFT 1:

Uppgift nr /
 Question no:

1

Poäng / Points
 awarded:

5

Lärarens
 anteckning
 Examiner's remarks:

a) utility function $U(x; y) = x^2 y$

if you do a monotonic transformation so that the powers in the utility function sum to 1, you can easier determine the demand of each good

$$U(x; y) = x^{2/2+1} y^{1/2+1} = x^{2/3} y^{1/3}$$

Demand for $x = \frac{2}{3} \cdot \frac{m}{P_x}$

For $y = \frac{1}{3} \cdot \frac{m}{P_y}$

b) When we already done the monotonic transformation it's easy to see how much martin spends on each good

For $x = \frac{2}{3} \cdot m$ ($\frac{2}{3}$ of his income)

$y = \frac{1}{3} \cdot m$ ($\frac{1}{3}$ of his income).



1



NE301-023.

3

Skriv ej i detta område
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Uppgift nr /
 Question no:
 1

Poäng / Points
 awarded:

Lärarens
 anteckning
 Examiner's remarks:

c) For a normal good:
 if the price goes up $P \uparrow$
 the demand goes down $D \downarrow$

So let's check if martin has an
 income $m=60$ and the price of x

$P_x = 10$ he will buy:

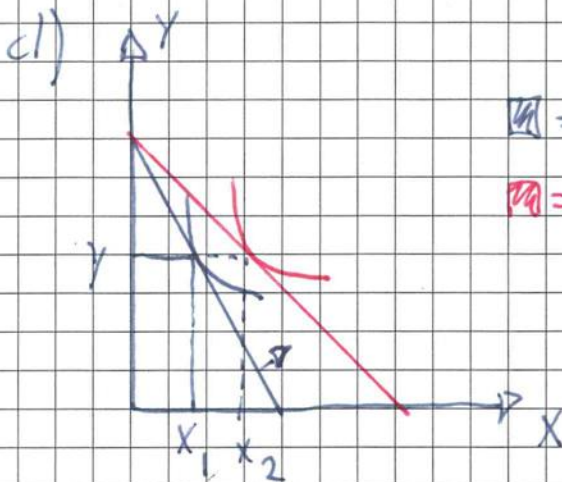
$$X = \frac{2}{3} \cdot \frac{60}{10} = 4 \text{ units of } x$$

if the price of x goes up to 16 $P_x = 16$

he will buy:

$$X = \frac{2}{3} \cdot \frac{60}{16} = 2.5 \text{ units of } x.$$

So his demand has decreased and
 therefore you can say that $x =$ normal
 good.



\square = old budget line/utility
 \square = new budget line/utility.

When price of x is
 decreased martin
 can buy more of x

and the same quantity of y but to a higher
 utility.



Ange anonymitetskod / Write your anonymity code
(Vid icke anonym tentamen ange kurskod + namn + personnummer)
(For non-anonymous exams write the course code + name + civic registration number)

Löpande sidnr
Consecutive no:

NEB01-023.

4

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Uppgift nr /
Question no:

1

Poäng / Points
awarded:

Lärarens
anteckning
Examiner's remarks:

c). The monotone transformation will make it easier to calculate but it only describes the ranking of the goods you consume. Two utility functions can have the same monotone transformation and then of course the same indifference curve but the indifference curve itself will be connected to each individual's own utility. And that's why the answers in a-d will not change cause the indifference will always be connected to $U(x,y) = x^2y$.

1



NEG B01 - 023

5

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UPPGIFT 2.

a) FIRM ALPHA

$Y_A =$ quantity of A

$P = 20 - Y_T$ $Y_T = Y_A + Y_B$ $Y_B =$ quantity of B.

PROFIT $\pi_A = P \cdot Y_A - C(Y_A)$

$\pi_A = (20 - (Y_A + Y_B)) \cdot Y_A - 2Y_A = 20Y_A - Y_A^2 - Y_A Y_B - 2Y_A$

$\frac{\partial \pi_A}{\partial Y_A} = 20 - 2Y_A - Y_B - 2$

$20 - 2Y_A - Y_B - 2 = 0$

$18 - Y_B = 2Y_A$

$\frac{18 - Y_B}{2} = Y_A$

FIRM BETA

PROFIT: $\pi_B = P \cdot Y_B - C(Y_B)$

$\pi_B = (20 - (Y_A + Y_B)) \cdot Y_B - 2Y_B = 20Y_B - Y_A Y_B - Y_B^2 - 2Y_B$

$\frac{\partial \pi_B}{\partial Y_B} = 20 - Y_A - 2Y_B - 2$

$\frac{\partial \pi_B}{\partial Y_B}$

$20 - Y_A - 2Y_B - 2 = 0$

$18 - Y_A = 2Y_B$

$\frac{18 - Y_A}{2} = Y_B$

See diagram on next page.

Uppgift nr /
Question no:

2.

Poäng / Points
awarded:

5,5

Lärares
anteckning

Examiner's remarks:

R
11



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b) Equilibrium - when Reaction curves cross

$$\frac{18 - Y_B}{2} = \frac{18 - Y_A}{2} \Rightarrow 9 - 0,5Y_B = 18 - \frac{(18 - Y_B)}{2}$$

$$\Rightarrow 9 - 0,5Y_B = 9 - (4,5 - 0,25Y_B)$$

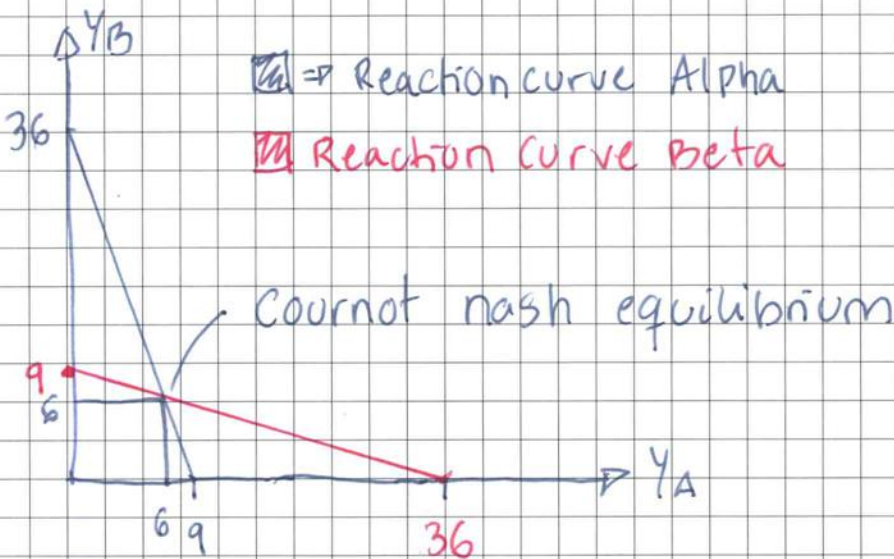
$$\Rightarrow 9 - 0,5Y_B = 9 - 4,5 + 0,25Y_B$$

$$\Rightarrow 9 = 4,5 + 0,75Y_B$$

$$\Rightarrow 4,5 = 0,75Y_B$$

$$\Rightarrow 6 = Y_B$$

$$Y_A = \frac{18 - Y_B}{2} \Rightarrow \frac{18 - 6}{2} = \frac{12}{2} = 6$$



$$P = 20 - Y_t \Rightarrow Y_t = Y_A + Y_B = 6 + 6 = 12.$$

$$P = 20 - 12 = 8$$

total quantity = 12

market price = 8.

Uppgift nr /
 Question no:
 2

Poäng / Points
 awarded:

Lärens
 anteckning
 Examiner's remarks:

115



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$$d) P = 20 - Y_t$$

$C_t =$ total costs.

$$\text{PROFIT } \Pi_f = P \cdot Y_t - C_t$$

$$\Pi_f = (20 - Y_t) \cdot Y_t - (2Y_A + 2Y_B)$$

$$\Pi_f = (20 - Y_t) \cdot Y_t - 2(Y_A + Y_B)$$

$$\Pi_f = (20 - Y_t) \cdot Y_t - 2Y_t$$

$$\Pi_f = 20Y_t - Y_t^2 - 2Y_t$$

$$\Pi_f' = 20 - 2Y_t - 2$$

FOC.

$$20 - 2Y_t - 2 = 0$$

$$18 = 2Y_t$$

$$9 = Y_t$$

they will produce 4,5 units each.

$$P = 20 - 9 = 11$$

- Equilibrium price

$$\Pi_A = P \cdot Y_A - C_A$$

$$\Pi_A = 11 \cdot 4,5 - 2 \cdot 4,5 = 40,5$$

$$\Pi_B = 11 \cdot 4,5 - 2 \cdot 4,5 = 40,5$$

e) If they decided to produce as a monopoly it would be attractive to cheat in order to get a higher profit. The total output for this monopoly is 9 units, but if one of them produce the Cournot nash output of 6 they will have the possibility of reaching a higher profit that would leave the other firm with only 3 units.

Uppgift nr /
Question no:
2

Poäng / Points
awarded:

Lärares
anteckning
Examiner's remarks:

11,5



NEG301-023

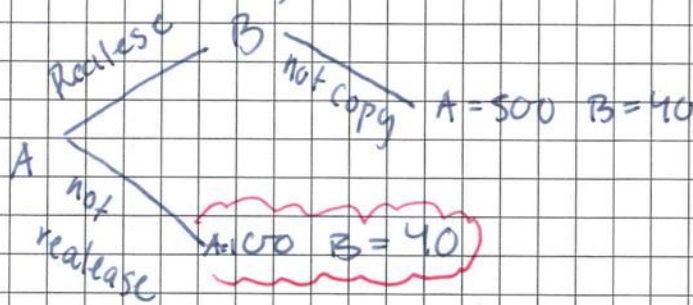
8

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UPPGIFT 3

A = -100 B = 200

a)



Uppgift nr /
 Question no:

3

Poäng / Points
 awarded:

2,75

Lärarens
 anteckning
 Examiner's remarks:

A should not release the product, if they do B is going to copy cause 200 is more than 40 and A will make a loss. AND FOR A 100 for not realising is more than -100.

b) The answer would still be no because B is going to copy and A will then have $-100 + 100 = 0$. if not realising they get 100 which is more than 0.

c) if B should be payed they would want more than 200^{no} otherwise they could still copy and get better off. IF B didn't copy A will get 500 and get 100 if they didn't release so they would pay up bill 400 because then they would be better off.

0,75

Microeconomics
NEGB01/ NEGB25

Answer Part 2, Question 4-5

Katarina Katz



NEGB01-023

10

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UPPGIFT 5.

Uppgift nr /
Question no:

5

$$a) C_L(L) = 60L + 0,2L^2 + 200 \quad PL = 120$$

Poäng / Points
awarded:

$$\pi_L \text{ PROFIT} = P_L \cdot L - C_L$$

Lärens
anteckning
Examiner's remarks:

$$\pi_L = 120 \cdot L - (60L + 0,2L^2 + 200) = 60L - 0,2L^2 - 200$$

$$\pi'_L = 60 - 0,4L$$

$$60 - 0,4L = 0$$

$$60 = 0,4L \quad \text{Maximising}$$

$$150 = L \quad \Rightarrow \text{quantity} = 150 \text{ kg.}$$

R

$$\pi_L = 60 \cdot 150 - 0,2 \cdot 150^2 - 200 = 4300$$

PROFIT can be 4300.

R

$$b) C_F(F) = 200F + 50F^2 \quad P_F = 1600$$

$$\pi_F = P_F \cdot F - C_F$$

$$\pi_F = 1600 \cdot F - (200F + 50F^2) = 1600F - 200F - 50F^2$$

$$\pi'_F = 1600 - 200 - 2 \cdot 50F = 1400 - 100F$$

$$1400 - 100F = 0$$

$$1400 = 100F$$

$$14 = F$$

They should produce
14 units.

R

See diagram on
next page under d).



NEG301-023

11

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Uppgift nr /
 Question no:

5

Poäng / Points
 awarded:

Lärarens
 anteckning
 Examiner's remarks:

$$c) C_L(L) = (65 + 2F)L + 0,2L^2 + 200$$

$$C_L(L) = (65 + 2 \cdot 14)L + 0,2L^2 + 200$$

$$C_L(L) = 93L + 0,2L^2 + 200$$

$$\text{Profit} = P_L \cdot L - C_L$$

$$\Pi_L = 120 \cdot L - (93L + 0,2L^2 + 200)$$

$$= 120L - 93L - 0,2L^2 - 200$$

$$= 27L - 0,2L^2 - 200$$

$$\Pi'_L = 27 - 0,4L$$

$$27 - 0,4L = 0$$

$$27 = +0,4L$$

$$67,5 = L$$

max profit
 ↓

12

$$\Pi_L = 27 \cdot 67,5 - 0,2 \cdot 67,5^2 - 200 = \underline{711,25}$$

d) With the extra cost the laundry will only have a quantity of 67,5 kg.

Extra cost = For pollution:

$$(65 + 2F)L + 0,2L^2 + 200 - (60L + 0,2L^2 + 200) \Rightarrow$$

$$65L + 2FL + 0,2L^2 + 200 - 60L - 0,2L^2 - 200 =$$

$$5L + 2FL$$

$$L = 67,5$$

$$5 \cdot 67,5 + 2F \cdot 67,5 = 337,5 + 135F$$

-> additional cost

$$SC_F(F) = 200F + 50F^2 + 337,5 + 135F$$

$$= 50F^2 + 337,5 + 335F$$

$$SMC = 2 \cdot 50F + 335 = 100F + 335$$

$$\text{Revenue} = P \cdot F = 1600F$$

$$MR = 1600$$

the optimal
 choice of
 L depends
 on F and
 F depends
 on L



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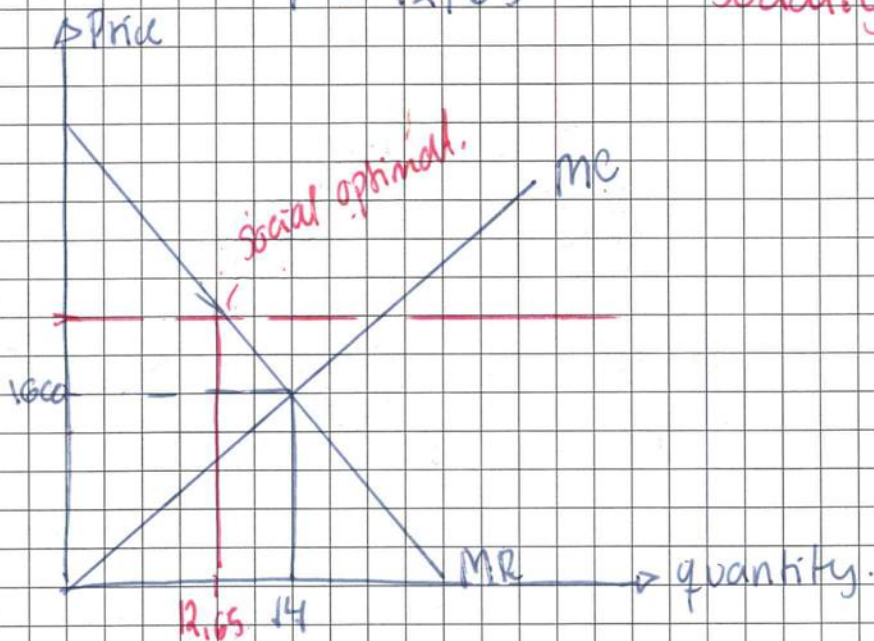
$$SMC = MR$$

$$335 + 100F = 1600$$

$$100F = 1265$$

$$F = 12,65$$

- optimal level
socially



SMC?

för regel
är priserna

MR: $p = 1600$
konstant

MC-kurvan

har
intercept
 $= 200$
inte null

e) with the pigouan tax is suppose to pay
for your pollution against the society.

$$C_p(F) = 200F + 50F^2$$

$$MC = 200 + 2 \cdot 100F = 200 + 100F$$

$$MR = 1600$$

$$SMC = 200 + 100F + t$$

$$SMC = MR \text{ when } F \text{ social optimal} = 12,65$$

$$200 + 100 \cdot 12,65 + t = 1600$$

$$200 + 1265 + t = 1600$$

$$1465 + t = 1600$$

$$t = 1600 - 1465 = 135$$

The tax should be
135.

would be
correct
if F were
12,65
R



NEGB01-023

13

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UPPGIFT 4.

assume price of L = 1

$$a) C = (100 \cdot H) + 2000$$

$$C = P_H \cdot H + P_L \cdot L$$

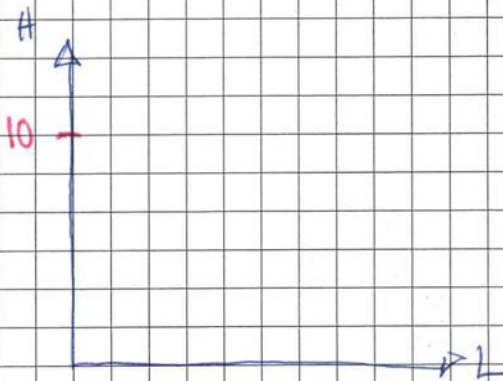
$$C - P_L \cdot L = P_H \cdot H \Rightarrow H = \frac{C - L}{P_H}$$

$$H = \frac{100H + 2000 - L}{100} \Rightarrow H + 20 - L$$

$$2H = 20 - L \Rightarrow H = 10 - L$$

$$C - P_H \cdot H = P_L \cdot L$$

$$100H + 2000 - 100H = L$$



b) Because if you have a increase in wage you can still choose to work the same number of hours as before and still make more money \rightarrow income effect

and if you have a decrease in wage you can choose to work more hours to get the same wage as before \Rightarrow substitution effect.

endowment
income
effect

Uppgift nr /
Question no:
4

Poäng / Points
awarded:

Lärarens
anteckning
Examiner's remarks:

✓



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Löpande sidnr
Consecutive no:

14

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Uppgift nr /
Question no:

Poäng / Points
awarded:

Lärarens
anteckning
Examiner's remarks: